

Patentability Discussion.**Present Invention:**

The present invention relates firstly to a method of operating a novelty device in a particular manner to provide the device with a realistic speech effect in an efficient and inexpensive manner.

In particular, this invention relates primarily to novelty devices incorporating a lenticular image behind a lenticular screen, each being relatively moveable with regard to the other such that when the image is moved up and down relative to the lenticular screen, the image changes depending on its particular disposition at any time during the movement to give the impression to the viewer of animation of the image.

The lenticular images consist of a plurality of images spliced together by any known method and printed on a substrate.

The lenticular screen consists of a plurality of adjacently disposed lenticules of a very few millimetres, or possibly even tenths of millimetres in diameter. The splicing of the images together in the lenticular image is dependent on the spacing between the lenticules of the screen as typically a movement between screen and image of the diameter of a single lenticule will be sufficient to reveal every image which has been spliced together in the lenticular image and provide the effect of animation.

→ The technology for producing such novelty devices has been well documented in the past, and the reader will be aware of such lenticular novelty devices, such have in the past been incorporated in stationery and the like to allow the viewing of a

brief animation by tilting and otherwise moving whatever item in which the image has been incorporated.

The present invention differs from this arrangement providing a means for both moving the lenticular image in a certain manner to cause the animation of the image and means for playing a sound sample which is matched to and synchronised with the movement, and thus the animation of the image.

GB2312349-Burder

This document discusses a method for capturing a series of images from a film, video or a computer animation and splicing together these images to form a lenticular image.

More specifically, the application discloses a method of creating a lenticular image directly from an animated source image by disposing the source animation directly in front of a physical integrating camera by which any number of individual video or digital images can be incorporated into the lenticular image. The physical integrating camera comprises a composite travelling or rotating film assembly comprising an aperture plate (typically a barrier grid or lenticular screen) and an image receiving medium such as film.

The specification also includes a discussion of how a weighting may be given to important frames in a particular sequence of images which form the animation to ensure that in the completed lenticular image, the animation is clearly seen, as opposed to being constituted of only one or two images from the original image sequence which showed any movement.

Finally, this specification does include mention of the use of a "sound chip" which may be incorporated into the final assembly so as to replay a programmed sound, such as might be heard during the animation of the image which results from moving the lenticular article in a particular direction as discussed above.

There is no indication in this specification as to how this might be achieved, and thus while this document prevents the patenting of the basic concept of incorporating a means for playing sound synchronised to the animation sequence viewable when the lenticular image is suitably moved, it cannot anticipate a particular method and apparatus for achieving this synchronisation in an effective and synchronised manner.

GB2304252-Burder (II)

This document is primarily concerned with a method for splicing together a greater number of images into a lenticular image than was previously possible. The result is a much smoother animation in the completed lenticular image when viewed through a suitable lenticular screen.

This is achieved by continuously moving a lenticular screen or aperture plate at a very slow speed over a film substrate, and exposing the images which ultimately form the resulting lenticular images consecutively while the lenticular screen is being moved. This results in different bands of the film being exposed to different images with the primary effect that, depending on the spacing of the lenticles in the moving screen and the rate at which the images are displayed, a much greater number of individual images from the animation sequence can be spliced together on the developable film substrate.

The overall effect to the viewer of a lenticular image so created is of a smooth animation sequence.

Although the vast majority of this specification is concerned with a method and apparatus for the creation of improved lenticular images, there is again brief disclosure (e.g. on page 8) of the possibility of including an audio output in the "animated parallax display" or lenticular image. The audio output can be synchronised for activation during the appropriate portion of movement of the lenticular image. Again, mention is made of a "sound chip" which is arranged for activation and for an audio emission which is relevant to the animation being viewed when the lenticular image reaches a particular angular inclination.

This specification then suggests the use of a tilt switch to achieve accurate activation.

There is no further disclosure of the manner in which the synchronisation of the audio emission to the movement of the lenticular image to achieve a "synchronised" audio output and it is this problem to which the present invention seeks a solution.

EP982701-Eastman Kodak

This specification is potentially the most relevant prior art document.

The specification is exclusively concerned with a system and article for displaying a lenticular image with sound. Specifically, the specification discusses the use of a stepper motor to rotationally or translationally drive a lenticular image so as to give the impression to an observer that an image is in animation. The specification is clear that the lenticular image may be moved

in translation relative to or behind a stationary lenticular screen to achieve the effect.

It is also clear from this specification that the applicants intend to use some form of electronic control which is coupled to both a mechanical driver mechanism and to a sound chip which is capable of replaying a sound which is associated to the images spliced together within the lenticular image of the device. Furthermore, the specification describes how the audio track from a film may be sampled at a suitable rate and programmed into the sound chip for playback in synchronicity with the movement of the lenticular image in the device. It is mentioned that an appropriate calculation may be performed to derive the rotation of the stepper motor in which the lenticular images are disposed in the most preferred embodiment to ensure that the correct image is viewable by a user when a particular sound sample is being played.

The distinction between this concept and that sought to be protected in the present invention is that the this European Application describes one means for synchronising the movement of the lenticular image to a particular sound sample. However, in this patent application, it is clearly the intention of the inventor to achieve the synchronised playback of particular sound segments depending on the image which is at any particular time being viewed by the observer.

→ This patent application do not address the fundamental difficulty with the transformation of an actual viewable video or film clip having an associated sound track (such as might be recorded on a video cassette for playback on a television) into an essentially simple device having a moveable lenticular image and an associated sound chip. In particular, it is generally only possible to sample the video clip at a very low rate, as only a

relatively small number of actual images can be spliced together into the single lenticular image, and this number is certainly nowhere near the number of frames in the clip. Hence, although it is possible to sample the video clip at a low rate to effectively condense the clip into only a few discreet images which can be spliced together in a lenticular image, it is impossible to do this with the sound track which must be sampled at a reasonably high rate so that the sampled signal provides a faithful representation of the original.

Therefore although the reproduced sound signal may be immediately recognisable as the original sound track, and furthermore this may be replayed in the same time that the lenticular image takes to move through its complete animation, the resulting effect is not one of faithful recreation of the original film or video clip. In particular, although the individual images within the lenticular image as the lenticular image is moved appear to the observer at the same time that the particular frames in the video or film clip would appear, and the sound playing at that time would be essentially the same as that in the original sound track (and thus the sound signal and the motion signal are effectively synchronised), the resulting effect is not continuous, particularly where the video or film clip is of a person or character speaking and the sound track is their speech.

The Present Invention-Revisited

The present achieves an effective and realistic synchronisation effect by deriving a drive signal from the audio signal which represents the audio to be played back by the sound chip or other suitable audio generating means. This drive signal is delivered to the drive mechanism and causes that mechanism to

operate in a repeating manner for varying periods of time so that a simple animation, such as that of a character's face opening it's mouth can be made to appear in synchronisation with the audio playback.

This gives the appearance that the animation is of the same duration as the sound sample and in complete synchronicity therewith.